K 54 273/8–St

Translation of the Annex to the IPER

Claims

1. A reluctance electric machine comprising
   (a) a stator part (4) with stator teeth (12) of magnetically conductive material that are provided with coil windings (24);
   (b) and a rotor part (6) arranged coaxially with respect to the stator part (12) and located opposite the stator part (12) so as to leave free an air gap (8) therebetween,
   (c) the rotor part (6) having a number of discrete poles (20) of magnetically conductive material that project in the direction towards the stator part (12),
   (d) that cooling with channelled coolant flow is provided at least for partial sections of the coil windings (24) of the stator part (12),
   (e) that the stator part (4) is provided with a sealing layer (26) on the side facing the air gap (8),

   characterized in
   (f) that a liquid cooling medium is provided, and
   (g) that the sealing layer (28) has a first layer (30) for fulfilling the sealing function and a second layer (32) for taking up the forces acting on the sealing layer (28).

2. A reluctance electric machine according to claim 1, characterized in that the coil windings (24) are provided with an enclosure each.

3. A reluctance electric machine according to claim 1, characterized in that several coil windings (24) are commonly provided with an enclosure each.

4. A reluctance electric machine according to claim 1, characterized in that the stator part (4) is provided with an enclosure (28, 40) in its entirety.

5. A reluctance electric machine according to any of claims 2 to 4, characterized in that there are provided several coolant supply means and several coolant discharge means for the enclosure.

6. A reluctance electric machine according to any of claims 1 to 5, characterized in that the stator teeth (12) have internal flow passages (34) for the cooling medium.

7. A reluctance electric machine according to any of claims 1 to 6, characterized in that, with respect to the axis of rotation of the electric machine (2), the stator part (4) is arranged farther radially inside and the rotor part (6) with its rotor poles (20) is arranged farther radially outside.

8. A reluctance electric machine according to any of claims 1 to 6, characterized in that, with respect to the axis of rotation of the electric machine, the stator part with its stator teeth is arranged farther radially outside and the rotor part is arranged farther radially inside.

9. A reluctance electric machine according to any of claims 1 to 8, characterized in that the stator part (4), on the side directed away from the rotor part (6), has a design (42) for increasing the heat dissipation.

10. A reluctance electric machine according to any of claims 1 to 9, characterized in that the coil windings (24), in the winding head portions (38) located on the face side of the stator teeth (12), are formed with flow passages for the cooling medium that are left free between coil winding conductors.

Sub a1 cont.

11. A reluctance electric machine according to any of claims 1 to 10, characterized in that the coil windings (24) of the stator part (4) are designed as individual coils that are not interlinked with respect to the magnetic flux.

12. A reluctance electric machine according to any of claims 1 to 11, characterized in that a first, internal cooling circuit for circulating the cooling medium and a second, external cooling circuit for circulating another cooling medium are provided, the latter being connected to the internal cooling circuit via a heat exchanger.

13. A reluctance electric machine according to claim 12, characterized in that the internal cooling circuit has a circulation pump of its own.

Sub a2

14. A reluctance electric machine according to claim 12 or 13, characterized in that the internal cooling circuit and the heat exchanger are integrated in terms of space on the reluctance electric machine.